

**INDIANA DEPARTMENT OF TRANSPORTATION
OFFICE OF MATERIALS MANAGEMENT**

**DEICING MATERIAL
ITM No. 810-15T**

1.0 SCOPE.

- 1.1** This test method covers the procedures for sampling deicing materials from a truck, stockpile, or liquid transport.
- 1.2** Deicing materials will be sampled only at each delivery point if used by the District Maintenance Department. Samples will be taken as soon as possible after delivery of material.
- 1.3** This ITM may involve hazardous materials, operations, and equipment and may not address all of the safety problems associated with the use of the test method. The user of the ITM is responsible for establishing appropriate safety and health practices and to determining the applicability of regulatory limitations prior to use.

2.0 REFERENCES.

2.1 AASHTO Standards.

- T 27 Sieve Analysis of Fine and Coarse Aggregate
- T 248 Reducing Field Samples of Aggregate to Testing Size

2.2 ITM Standards.

- 207 Sampling Stockpiled Aggregates

3.0 TERMINOLOGY. Definitions for terms and abbreviations shall be in accordance with the Department's Standard Specifications, Section 101.

4.0 SIGNIFICANCE AND USE. This ITM will be used to sample deicing materials at the point of delivery.

5.0 APPARATUS.

- 5.1** Fire shovel
- 5.2** Sampling tube, 3 in. minimum in diameter and 3 ft minimum in length
- 5.3** Template, conforming to the shape of the conveyor belt
- 5.4** Sample containers, five-gallon plastic bucket with lid, or moisture-proof plastic bag

6.0 SAMPLE SIZE.

- 6.1 Bulk Shipments.** Bulk shipments include loose material or material in transport containers weighing more than 100 lbm. A minimum sample of 10 lbm will be obtained.
- 6.2 Moisture-Proof Bags.** Moisture-proof bag shipments include material in transport containers of 100 lbm or less. One unopened bag will be obtained.
- 6.3 Liquid Samples.** A 1 qt. sample will be obtained in a plastic or glass container.

7.0 SAMPLING.

- 7.1 Truck Sampling.** A sample may be obtained from a truck in accordance with the following procedure:
 - 7.1.1** Insert a fire shovel horizontally into the material at the approximate mid section of the truck and lift the fire shovel vertically to establish a horizontal plane in the material
 - 7.1.2** Insert the fire shovel vertically to establish a vertical face below the horizontal plane
 - 7.1.3** Insert the fire shovel horizontally into the vertical face at the depth of approximately twice the thickness of the maximum particle size of the material. Lift the fire shovel vertically to obtain the sample, and place the sample into the sample container.
 - 7.1.4** Seal the container to prevent the loss or gain of moisture
- 7.2 Stockpile Sampling.** A sample may be obtained from a stockpile prior to placing the material in the storage building, if approved by the District Testing Engineer. The sample will be obtained with a fire shovel or sampling tube in accordance with ITM 207, section 5.2. The sample container will be sealed immediately to prevent loss or gain of moisture.
 - 7.2.1** Samples will not be obtained by climbing onto stockpiles due to the hazard of burial and suffocation from unstable stockpiles of unconsolidated materials. Also, over-steepened stockpiles may sluff and engulf personnel in the immediate area.
 - 7.2.2** Personnel requiring additional information concerning specific sampling situations are directed to contact the appropriate District Testing Engineer.

- 7.3 Belt Sampling.** If the material is stockpiled in the storage building by means of a conveyor system, the sample will be obtained from the conveyor belt. A minimum of three approximately equal increments, selected at random, from the belt will be obtained and combined to form the sample. The procedure will be as follows:
- 7.3.1** Stop the conveyor belt while the sample is being obtained
 - 7.3.2** Insert two templates and space them such that the material contained between the templates will yield at least one-third of the minimum sample weight
 - 7.3.3** Carefully scoop all material between the templates, collect the fine material on the belt with a brush, and place all materials in the sample container
 - 7.3.4** Immediately seal the container to prevent the loss or gain of moisture
- 7.4 Liquid Transport Sampling.** A sample of liquid deicing material will be obtained from the transport in accordance with the following procedure:
- 7.4.1** Circulate the material in the transport sufficiently to assure uniform material
 - 7.4.2** Obtain the sample from a valve in the discharge line of the transport
 - 7.4.3** Use only new, clean dry sample containers
 - 7.4.4** Drain enough material from the discharge line before sampling to clear the line of any sediment
 - 7.4.5** Seal the filled container immediately with a clean dry, tight fitting lid
 - 7.4.6** Label the side of the container
- 7.5 Documentation.** The general weather conditions, time of sample, whether the truck was tarped or un-tarped, and any other pertinent details which could affect the test results will be documented.
- 8.0 Moisture Content.** The moisture content will be determined as follows:
- 8.1** Reduce the sample in accordance with AASHTO T 248 Method B or C to a minimum sample size of 1000 gm
 - 8.2** Weigh the sample to the nearest 0.1g in a container dried at 230°F ± 9°

- 8.3 Place the sample in an oven at $230^{\circ}\text{F} \pm 9^{\circ}$ for 2h
- 8.4 Weigh the sample immediately to the nearest 0.1g
- 8.4 Calculate the moisture content to the nearest 0.5 % as follows:

$$\text{Moisture Content, \%} = \frac{W_1 - W_2}{W_2} \times 100$$

where:

W_1 = original weight of sample, g

W_2 = dried weight of sample, g

- 8.0 **Gradation.** The gradation of the dried sample will be determined as follows:
 - 9.1 Sieve the sample with a mechanical shaker for 5 minutes. The sample may be sieved by hand in accordance with AASHTO T 27
 - 9.2 Determine the gradation of the sample in accordance with AASHTO T 27